Members of the subcommittee

Chairman
Mr R N J Barraclough

Secretary
Mr P R E Double

Dr J Arnold	British Printing Industries Federation
Dr P J Baxter	Employment Medical Advisory Service
Mr W Hird	Newspaper Publishers' Association
Mrs E Horwood	Society of Graphical and Allied Trades
Mr R A Hudspith	National Graphical Association
Mr G H Hutchinson	Society of British Printing Ink Manufacturers
Mr A Shanks	Newspaper Society

The subcommittee expresses its thanks to those drawn from scientific and medical interests, the inkmaking industry and the Health and Safety Executive represented on the working group referred to in this guidance.

Preface

This guidance has been produced for the Health and Safety Commission's Printing Industry Advisory Committee by the Committee's joint subcommittee on health and safety in the use of materials and substances, in consultation with the Health and Safety Executive. Advisory Committees are appointed by the Health and Safety Commission under Section 13(1)(d) of the Health and Safety at Work etc Act 1974 and form part of the Commission's formal advisory structure.

The guidance reflects the agreement reached in the subcommittee between representatives of interested printing industry employers' organisations, the Society of British Printing Inks Manufacturers and the printing trade unions, on the general approach to be adopted to the control of 'ink fly' in newspaper pressrooms at the present time. The Printing Industry Advisory Committee endorses this agreement and hopes that the guidance will be of value to those dealing with ink fly in the industry.

SOUTHAMPTON LIBRARY UNIVERSITY

Ink fly in newspaper pressrooms.

1 Ink fly, also known as ink mist or ink sling, is generated at the rollers of newspaper printing presses. It consists of particles of ink of different sizes together with variable amounts of paper dust, and is projected into the pressroom atmosphere as a fine mist.

2 Printing inks for use on letterpress and on direct litho newspaper printing machines are formulated with mineral oils which may contain, amongst other polycyclic aromatic hydrocarbons (PAH), a small but measurable amount, in the region of 10 ppm (weight for weight), of benz α pyrene, commonly referred to as b(a)p. According to the International Agency for Research on Cancer (supplement 4 of the IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, volumes 1-29), the carcinogenicity of some mineral oils may be due to the presence of PAHs of which b(a)p has been the most widely studied. It is not known whether prolonged inhalation of ink fly formulated from mineral oils, together with carbon black, may be harmful to pressroom operatives. There is, however, in any case a need to minimise ink fly emission into the working environment on the grounds of its offensiveness.

3 An epidemiological survey related to the printing industry is currently in progress and its results will be published in due course. Meanwhile the joint subcommittee on health and safety in the use of materials and substances, having regard to para 6 of the Health and Safety Executive's guidance note EH 18 *Toxic substances: a precautionary policy* which outlines a general precautionary policy towards airborne contaminants, has considered the problems of control and measurement of ink fly in newspaper pressrooms, and its views are stated in the following paragraphs.

4 As a general precept, ink manufacturers and users alike should continue with their present endeavours to improve the working environment in newspaper pressrooms. Any or all of the following approaches, which are not mutually exclusive, may be appropriate:

- research on alternative base materials;

- the further development and use of low mist inks;

- the use of well designed exhaust ventilation (or electrostatic or other control) at printing presses;

- the adoption of printing techniques with least propensity to generation of ink fly;
- the optimum setting on rollers, cylinders etc.

5 A working group appointed by the subcommittee has reported on the techniques that have been used for the measurement of ink fly in newspaper pressrooms and on a study of their correlation. The working group found that various air sampling methods with no deliberate size selection gave broadly similar results. The group recommended that air sampling for environmental control should collect total airborne particulate material and that subsequently an estimation should be made of the proportion of solids and oil by extraction of the latter with cyclohexane. The subcommittee endorses these recommendations and believes that the previous confusion about sampling has thus been considerably clarified, and the way opened for discussion about the use of air sampling results in the control of exposure of pressroom workers to ink fly.

6 The subcommittee has considered environmental survey data obtained in British newspaper pressrooms and has concluded that a maximum time weighted average exposure to ink fly of 1.5 mg/m^3, measured as cyclohexane soluble material in the manner described in para 7, for an individual over the operating time of a shift, is a realistic target figure. The subcommittee accepts that where a consistent relationship between cyclohexane soluble and total particulate material can be demonstrated, the total particulate concentration may alternatively be measured for assessment of control of ink fly, and notes that in this connection experience indicates in many instances that 1.5 mg/m^3 of cyclohexane soluble material will correspond to a total particulate concentration of less than 3 mg/m^3.

7 The subcommittee endorses the following air sampling technique and strategy which is derived from the report of the working group referred to in para 5:

> *Samples should be taken by systems incorporating a pump and filter and the total particulate should be determined gravimetrically.* The oil content of a sample of ink fly may be*

---

*A method is described in MDHS (Methods for the Determination of Hazardous Substances) 14: *General methods for the gravimetric determination of respirable and total dust,* price £1.00; obtainable from the Health and Safety Executive public enquiry point (see back cover).

determined by ultrasonic extraction with cyclohexane and weighing of the extract. Other methods may be used for measuring total particulates or oil provided that they can be shown to give comparable results. Samples should be taken at a suitable number of points in the pressroom, selected in the light of previous sampling experience or preliminary assessment of mist levels and work patterns, so as to give the best possible estimate of workers' exposure. Whenever necessary - such as when the pattern of work undergoes change or when a shift in the level of results appears - the correlation between such samples and actual exposure levels should be checked with personal samplers.

8 The subcommittee takes the view that the proposals outlined in paras 4 to 7 should be periodically reviewed and if necessary revised to take account of latest research, evidence and best known practices then prevailing.

9 It should be noted that the target figure of 1.5 mg/m^3 has not been considered by the Health and Safety Commission's Advisory Committee on Toxic Substances and should not therefore be regarded as a control limit or recommended limit as defined in the Health and Safety Executive's guidance note EH 40 *Occupational exposure limits.* Whilst the target figure and other proposals contained in this guidance have no legal status, it is nevertheless hoped that ink makers and users will accept and act on them.

Printed in the UK for HMSO
Dd715136 C30 4/84 (805)